High Performance Computing Software

JPL Internal Seminar Series

Chapel: Cascade's High Productivity Language

by

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12:00 noon – 1:00 p.m.

Building 126, Room 225

The Cascade project is an effort lead by Cray Inc. and funded via the DARPA High Productivity Computing Systems initiative. The objective of project is advance the value of high-performance computing systems to the mission-oriented agencies supported by DARPA. One way to improve the value of such systems is to make them more widely applicable and easier to use by a broader group of scientists, engineers, and data analysis.

This talk describes one aspect of Cascade, our work on defining a new programming language and environment with the working name Chapel. The focus of this effort is to provide better abstractions for parallel programming than the current state of art. These abstractions involve locality management rather than processor management.

The desire for abstraction must be balanced against the need for compile-time information to allow generation of efficient executables. The base Chapel definition and its prototype, open-source implementation will explore type-parameterization of functions and aggressive use of compile-time specialization.

Chapel borrows concepts from High Performance Fortran as well as modern object-oriented programming to provide a language suitable for rapid program development and experimentation on highly-scalable systems.

For questions, please contact Dan Katz at 4-7359.